

REMARKS

The Examiner is thanked for the thorough examination of this application. The Office Action has, however, tentatively rejected all claims. Applicants respectfully request reconsideration and withdrawal of the rejections base on the amendments and remarks set forth herein.

Oath/Declaration

The Office Action objected to the oath/declaration because one of the inventors originally wrote the date in Chinese characters, and then scratched that out to replace it with Arabic characters. A substitute declaration is submitted herewith, which replaces the original declaration. The undersigned wishes to bring the Examiner's attention to a correction in the translation of one of the inventor's to this substitute declaration. Specifically, the translation of the last inventor has been corrected from Pin-Chen Chen to Ping-Chen Chen (the "g" was missing from the translation in the original declaration).

Claim Objections

Claims 1-22 are objected to because of an informality, namely, that in claims 1, 15, and 18, the recitation "dielectric layer" should be "dielectric protrusions". The Applicants have amended claims 1, 15, and 18 to address and overcome this informality.

Claim Rejections- 35 USC 112

Claim 4 is rejected under 35 U.S.C 112, second paragraph. Claim 4 is incorrect in reciting a substrate thickness of 500-1500 “nm”. The Applicants have amended claim 4 to read 500~1500 “μm”.

Claim Rejections- 35 USC 103

Claims 1-3, 6-9, 12-20, and 22 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Zhaoning Yu, et al (Appl. Phys. Lett., 77(7)), in view of Perkins, et al (U.S. Patent 6,122,103). Applicants respectfully traverse the rejections for at least the reasons discussed below.

Yu et al fail to disclose a transparent substrate

Independent claims 1, 15, and 18 all recite a transparent substrate. This feature is significant to the claimed embodiments, as it is directed to a transmissive polarizer for providing a very high extinction ratio (>1000) for transmitted light.) See Table 1 and the related text of the Specification.)

The Office Action alleges that Yu et al disclose a silica substrate as a transparent substrate. The Applicants disagree. Contrary to the Office Action’s assertion, as Yu et al is directed to a reflective polarizer, the substrate cannot be transparent. Furthermore, the reflectivity measurement given in Yu et al (e.g., FIG. 3) also indicates that the substrate is not a transparent substrate. Therefore, the rejection is error and should be withdrawn for this reason alone.

The combination of Yu et al and Perkins et al is improper

In addition to the foregoing reason, the rejections should be withdrawn as they fail to identify a proper suggestion or motivation for combining the teachings of the cited art. The Office Action alleges that the vertical spacing between the first and second metal layers would have been 100 nm or less in view of Perkins et al. Applicants, however, submit that there is no motivation to modify the metal thickness of Yu et al in a manner suggested by Perkins et al. In this regard, Perkins et al disclose a transmissive polarizer with a transparent substrate 400 (Col. 5, lines 51-55). Although Perkin et al appear to teach that metal thickness is a result-effective variable, it would not lead one to modify the metal thickness of a reflective polarizer (as in Yu et al) since the polarization mechanisms for the transmissive polarizer and reflective polarizer are distinct. Therefore, there is no motivation and no reasonable expectation success for achieving a vertical distance not greater than 100nm as recited in independent claims 1, 15, and 18.

The claimed invention provides unexpected results

In addition, the claimed invention has been fabricated and yields unexpected superior extinction ratio in view of the cited references. See Table 1, FIG. 9A and the related text. The claimed polarizer exhibits a very high extinction ratio (>1000) over a wide incident angle (0-80°). In comparison, the polarizer of Yu et al provides an extinction ratio of not exceeding 250 (for reflected light), and the polarizer of Garvin et al provides an extinction ratio of 500. As these superior results were not expected, this provides additional evidence as a secondary consideration against the combination of the cited references.

Therefore, claims 1, 15, and 18 are novel and non-obvious over the cited references. Insofar as claims 2-14, 16-17, and 19-22 depend from claims 1, 15 and 18, respectively, it is Applicants' belief that these claims are also allowable at least by virtue of their dependency.

Claims 4, 5, 10, 11, and 21 stand rejected under 35 U.S.C 103(a) as allegedly unpatentable over Yu et al and Perkins et al and further in view of Garvin et al (U.S. Patent 4,289,381).


Claims 4, 5, 10, 11, and 21 ultimately depend from independent claims that include the aforementioned elements that is novel and non-obvious over the cited references, and thus these claims are also in condition for allowance for at least that reason.

CONCLUSION

In view of the foregoing, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

By: 
Daniel R. McClure
Registration No. 38,962

Thomas, Kayden, Horstemeyer & Risley, LLP
100 Galleria Pkwy, NW
Suite 1750
Atlanta, GA 30339
770-933-9500